

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) Inspection machine for printed matter in the form of printed sheets, comprising:

a sheet feeder,

a first sheet inspection unit with a first inspection cylinder for transporting a printed sheet during inspection, a first illumination means and a first camera connected to an analysing device for taking an image of the printed sheet while it is transported on the first inspection cylinder,

a second sheet inspection unit with a second inspection cylinder for transporting a printed sheet during inspection, a second illumination means and a second camera connected to the analysing device for taking an image of the printed sheet while it is transported on the second inspection cylinder,

a third sheet inspection unit with a third inspection cylinder for transporting a printed sheet during inspection, a third illumination means and a third camera connected to an analysing device for taking an image of the printed sheet while it is transported on the third inspection cylinder,

an input transfer cylinder to successively bring the printed sheets to the first inspection unit, and

an output transfer cylinder to take away the printed sheets from the ~~first~~ third inspection unit,

wherein the ~~input~~ input transfer cylinder, the first, second and third inspection cylinders and the output transfer cylinder are disposed one after the other in direct contact so that a printed sheet is transferred directly and successively from the input transfer cylinder to the first inspection cylinder, to the second inspection cylinder, to the third inspection cylinder, and to the output transfer cylinder,

and wherein the first, second and third inspection units and the input and output transfer cylinders are arranged in such a manner that the printed sheet is transferred directly from one

transfer or inspection cylinder to another and that the inspected printed sheet is taken away from the first, second or third inspection cylinder only once the inspection of the sheet is completed by the first, second or third inspection unit.

2. (cancelled)

3. (previously presented) A machine as claimed in claim 1, wherein the first inspection cylinder is a transparent cylinder, the first illuminating means are placed inside the transparent cylinder and the first camera is placed outside the transparent cylinder for inspecting a printed sheet in transparency.

4. (previously presented) A machine as claimed in claim 1, wherein the second sheet inspection unit inspects a first illuminated side of the printed sheet.

5. (cancelled)

6. (previously presented) A machine as claimed in claim 1, wherein the third sheet inspection unit inspects a second illuminated side of the printed sheet.

7. (cancelled)

8. (previously presented) A machine as claimed in claim 1, wherein the second inspection unit and the third inspection unit each further include at least one non-visible feature inspection unit.

9. (previously presented) A machine as claimed in claim 8, wherein the non-visible feature inspection unit includes means for detecting IR, UV or magnetic properties on the printed sheets.

10. (previously presented) A machine as claimed in claim 1, wherein the first, second and third inspection cylinders are carrying only one set of grippers each, and the diameter of the first, second and third inspection cylinders is minimized for minimal transport and inspection time.

11. (previously presented) A machine as claimed in claim 1, wherein the input transfer cylinder, the first second and third inspection cylinders, and the output transfer cylinder are arranged in a zigzag manner such that a transport length of a printed sheet on each of the first, second and third inspection cylinders, between an input location where a printed sheet is transferred onto the first, second or third inspection cylinder and an output location where the printed sheet is transferred away from the first, second or third inspection cylinder is optimised for a given sheet length.

12. (previously presented) A machine as claimed in claim 11, wherein the transport length of the printed sheet on the first, second or third inspection cylinder is slightly greater than the length of the printed sheet to be inspected.

13. (previously presented) A machine as claimed in claim 1, further comprising a marking unit placed downstream of the output transfer cylinder for marking defective sheets.

14. (previously presented) A machine as claimed in claim 1, wherein each of the first, second and third cameras is a linear camera that takes successive linear images of the printed sheet being inspected and which is synchronized with the sheet transport on the associated first, second or third inspection cylinder.

15. (previously presented) A machine as claimed in claim 14, wherein each of the first, second and third inspection cylinder comprises an encoder for synchronizing operation of the associated linear camera.

16. (previously presented) An inspection process for printed matter in the form of printed sheets, wherein the process comprises the following steps:

successive printed sheets to be inspected are transferred from a feeder to a first inspection unit in which a first inspection by transparency is carried out, the printed sheets being transported in the first inspection unit by a first inspection cylinder;

once the first inspection is terminated, the printed sheets are transferred to a second inspection unit in which a second inspection of a first side of the printed sheets is carried out, the printed sheets being transported in the second inspection unit by a second inspection cylinder;

once the second inspection is terminated, the printed sheets are transferred to a third inspection unit in which a third inspection of a second side of the printed sheets is carried out, the printed sheets being transported in the third inspection unit by a third inspection cylinder;

once the third inspection is terminated, the printed sheets are transferred to a marking unit and are marked as defective if the result of one of the first, second and third inspections shows a defect; and

once marking has been performed, the printed sheets are transported in a delivery unit and sorted in delivery piles depending on whether or not the printed sheet are marked as being defective,

wherein transfer of the printed sheets from the first inspection unit to the second inspection unit, and from the second inspection unit to the third inspection unit, is made directly from the first inspection cylinder to the second inspection cylinder, respectively from the second inspection cylinder to the third inspection cylinder.

17. (previously presented) An inspection process according to claim 16, wherein the second or third inspection includes inspection of visible features on the printed sheets.

18. (previously presented) An inspection process as claimed in claim 16, wherein the diameter of the first, second and third inspection cylinders is minimized for minimal transport and inspection time.

19. (previously presented) An inspection process as claimed in claim 16, comprising the step of arranging the first, second and third inspection cylinders in such a manner that a transport length of a printed sheet on each inspection cylinder, between an input location where a printed

sheet is transferred onto the inspection cylinder and an output location where the printed sheet is transferred away from the inspection cylinder is optimised for a given sheet length.

20. (previously presented) An inspection process as claimed in claim 19, wherein the transport length of the printed sheet on each of the first, second and third inspection cylinders is selected to be slightly greater than the length of the printed sheet to be inspected.

21. (previously presented) An inspection process as claimed in claim 16, wherein the first, second and third inspections include synchronizing operation of a linear camera that takes successive linear images of the printed sheet being inspected with the sheet transport on the associated first, second and third inspection cylinder.

22. (previously presented) An inspection process according to claim 16, wherein the second or third inspection includes inspection of invisible features on the printed sheets.